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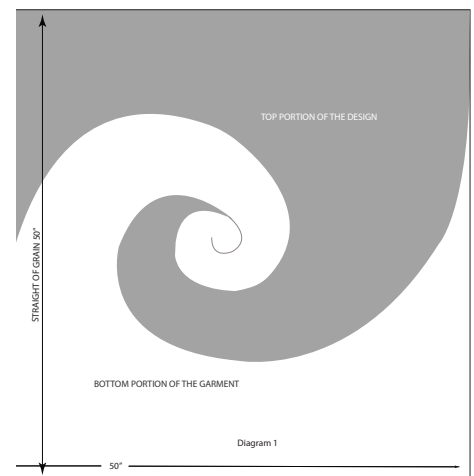
Spiral Into Zero-Waste

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Keywords: Sustainability, Cotton, Spiral

Contextual Review and Concept: The ever-increasing production and consumption of fashion has lead to an equally increased use of resources, especially fabric. (Niinimäki, 2013) Traditional garment production using the “cut and sew” method of cutting fabric pieces from patterns and sewing them into a garment yields approximately a 15% fabric waste. Zero-waste fashion design addresses this concern by producing garments without fabric waste. The pattern making stage needs to be an integral part of the design process, rather than a stage that follows it. (Rissanen, 2005)

This design, *Spiral Into Zero-Waste*, is an indirect outcome from the investigation of *Sanah Sharma's Planar Flux Hybrid Clothing Technique*. One of the Sharma's alternative pattern cutting techniques utilizes a spiral pattern. Even though patterns that are developed from a spiral reduce the amount of fabric needed to develop a garment, (Shama 2015) the corners remaining after cutting out her spiral pattern produced waste. Looking for an innovative method that would provide a sustainable solution to address pre-consumer textile waste, a double spiral pattern was developed resembling a yin-yang (a linked double spiral) cut apart, but leaving the square edges attached to the bottom areas of each spiral. (See Diagram 1) This pattern was used in a previous skirt design and the only vision for this design was to use the same basic pattern to create a full garment with zero-waste. There was no other preconceived concept for the design outcome prior to the draping of the separated spirals onto the half-scale form.



Aesthetic Properties and Visual Impact: To emphasis the angulation of the spirals as they wind around the body, the fringed edge of the selvage is sewn to the outer edge of the garment. The bodice front and back and the collar are created as the top spiral pattern wraps around the upper part of the body, then extends down the wearer's right side. The crosswise straight edge of the top spiral pattern is connected to the straight of grain right edge of the bottom spiral pattern. An interesting detail is created on the wearer's left side when the inner spiral of the bottom pattern is sewn to itself. To create visual balance, the remaining selvage fringed edge is hand-sewn starting with a small spiral on the left side then fed through grommets that help cinch in the waist and ending in a larger spiral that sits below the wearer's right hip. To develop an overall harmonious and compelling garment, that reveals the feminine figure, double-ended darts and pleats were strategically placed along the waistline.

Cohesion: *Spiral Into Zero-Waste* successfully meets the needs of the environment, the industry, and the individual by creating a flexible, creative design that speaks to the form and function of the body in a responsible way.

Process, Technique, and Execution: Continuing with an earlier investigation, a half-scale pattern was

utilized from a previous design. The final outcome of the garment was not predetermined. Preliminary design decisions were made, as the fabric was being draped and wound around the half-scale form. Adjustments were made to a full-scale pattern that was drafted, cut into muslin, and draped onto a full-scale form. Before transferring the pattern to the cotton denim fabric measuring 50 inches by 50 inches, it was modified to reflect adjustments made on the muslin drape. Changes were finalized in the denim to adjust for the drape of the fabric on the form to accentuate the waist with darts and pleats. The traditional rule of the grainline running parallel to the center front and center back is not followed in this design. The bias is evident at the center back and at the center front, creating an appealing drape. A coral topstitch that matches a line of stitching that already existed on the selvage is used to outline and accentuate the spirals. Finally, hooks and snaps were strategically placed to maintain closure.

Design Contribution and Innovation: The outcome of the *Spiral Into Zero-Waste* garment was unexpected, creative, and liberating. The designer had to deviate from her traditional design methods to develop this zero-waste garment by bringing the pattern into the design process. Further experimentation using the spiral to inspire and create zero-waste garments will continue. Contributing to Dame Ellen MacArthur's idea that instead of just trying to "do less bad," we need to change the way we make and use clothes so that their production and use builds economic, societal and natural capital rather than depleting it. (The Business of Fashion and McKinsey & Company, 2017)

Materials: Cotton Denim: 99% Cotton, 1% Spandex

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